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Nematinae (Hymenoptera, Tenthredinidae) of Thailand, with notes on some other southeastern Asian nematines

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Abstract

Nine species in five genera of Nematinae are recorded for the first time from Thailand: *Trichiocampus pruni* Takeuchi, *Dineura sharkeyi*, **sp. n.**, *Moricella rueaensis*, **sp. n.**, *Nematus soidaoi*, **sp. n.**, *Pristiphora chalybeata* Benson, *Pristiphora ettera*, **sp. n.**, *Pristiphora inthanoni*, **sp. n.**, *Pristiphora annetna*, **sp. n.**, and *Pristiphora phahompoki*, **sp. n**. A key is given for the genera and species of Thailand. New records and description of the male are given for *Pristiphora borneensis* Forsius from Sabah, Malaysia, and a new record is given for *Pristiphora sinensis* Wong from China.

Keywords

sawflies, Symphyta, southeastern Asia

Introduction

Nematinae are the dominant sawflies in the arctic and subarctic regions of the world. Numbers of species drop sharply toward the south, and very few occur in tropical regions. In the Western Hemisphere, only a few extend southwards into Mexico

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and only six species, all *Pristiphora* Latreille, are native to southern Mexico, Central, and South America (Smith 2003). In southeastern Asia, one species is known from Borneo and only a few from as far south as Myanmar, Taiwan, Thailand, and Vietnam. Benson (1963) first summarized what was known of the southeastern Asian Nematinae, and Wong (1977) treated *Pristiphora* in China and southeastern Asia. Saini and Chambal (1996) and Saini (2006) recognized three *Pristiphora* species from India, and Wei (Wei 1995, 1998, 2002a; in Nie and Wei 1998, 2009; in Wei and Nie 1998, 2002, 2003; in Wei et al. 1999, 2003a, 2003b) described a number of *Pristiphora* species from China. Haris (2007) added an additional species of *Pristiphora*. Nematinae are not commonly collected this far south; therefore, it is intriguing to find and record additional species from these southern localities. During the Thailand Biodiversity Inventory, a collaborative project initiated by M. J. Sharkey, University of Kentucky, Knoxville, and the Queen Sirikit Botanical Garden and the National Parks, Wildlife, and Plant Conservation Department of Thailand, nine species in five genera of Nematinae were collected. Only two of these species corresponds to those treated by Benson (1963), Wong (1977), Saini (2006), Haris (2007), or any Chinese or Palearctic or Holarctic species, and the rest are described as new. It is probable that more will be found through further intense collecting in this region.

Materials and methods

Specimens are deposited in the Queen Sirikit Botanical Garden Entomological Collection, Chiang Mai, Thailand (QSBG); the National Museum of Natural History, Smithsonian Institution, Washington, DC, USA (USNM); and the Bernice P. Bishop Museum, Honolulu, HI, USA (BPBM).

Images for plates were acquired through an EntoVision micro-imaging system. This system included a Leica M16 or Leica DRMB compound microscope with a JVC KY-75U 3-CCD digital video camera or a GT-Vision Lw11057C digital camera attached that fed image data to a notebook or desktop computer. The program Cartograph 5.6.0 was then used to merge an image series (typically representing 30 focal planes) into a single in-focus image. Lighting was achieved using techniques summarized in Buffington et al. (2005), Kerr et al. (2009), and Buffington and Gates (2009). All specimens were mounted from material collected in alcohol.

Results

Nine species in five genera were collected during the Thailand Biodiversity Survey, one species each of *Trichiocampus* Hartig, *Dineura* Dahlbom, *Moricella* Rohwer, and *Nematus* Panzer, and five species of *Pristiphora*.

Key to Genera and Species of Thailand

1 Forewing with base of vein 2A&3A present, joining to 1A to form a small basal anal cell (Fig. 1, left line); vein M joins Sc+R near Rs+M (Fig. 1, right line) ..... ***Trichiocampus pruni* Takeuchi**

– Forewing lacking basal anal cell, 2A&3A straight; M joins Sc+R widely separated from Rs+M (as in Fig. 9, left line) **2**

2 Forewing with vein 2r present (Figs 4, 9); left mandible in lateral view gradually tapering from base to apex..... **3**

– Forewing with vein 2r absent (as in Fig. 17); left mandible in lateral view with base bulbous and apical portion long, thin, and bladelike **4**

3 Tarsal claws simple..... ***Dineura sharkeyi* sp. n.**

– Tarsal claws with long inner tooth, longer and stouter than outer tooth..... ..... ***Moricella rueaensis* sp. n.**

4 Clypeus emarginated (Fig. 12); tarsal claws with long inner tooth; female sheath from above narrowing to acute apex, without scopae .... ***Nematus soidaoi* sp. n.**

– Clypeus truncate; tarsal claws with small or long inner tooth; female sheath broad at apex, with scopae; *Pristiphora* **5**

5 Female **6**

– Male (*P. inthanoni* and *P. phahompoki* unknown) **10**

6 Third abdominal segment and underside of fourth segment white; body with bluish metallic sheen [inner tooth of tarsal claws about as long as outer tooth; hind tibial spurs half length of hind basitarsomere; hind basitarsomere equal to length of 3 following tarsomeres] (not seen, from Benson 1963; lancet illustrated by Benson, fig. 11) ..... ***Pristiphora chalybeata* Benson**

– Abdomen black or mostly black above and white below; body without metallic sheen..... **7**

7 Venter of abdomen white; legs white (at most narrow apical ring on hind tibia) (Figs 14–16); 4 cubital cells in forewing; tarsal claws with long inner tooth, equal to or nearly length of outer tooth **8**

– Venter of abdomen black; legs with more black, apical third or half of hind tibiae black, femora mostly black (Figs 17, 19); 3 cubital cells in forewing; tarsal claws with small inner tooth, about half length of outer tooth **9**

8 Pronotum white (Fig. 14); clypeus and supraclypeal area black; serrulae of lancet shallow, flat; serrulae with anterior subapical spurette (Fig. 21)..... ..... ***Pristiphora ettera* sp. n.**

– Pronotum mostly black (Fig. 15); clypeus and supraclypeal area brown; basal serrulae of lancet broad, rounded, apical serrulae flat; serrulae without anterior subapical spurette (Fig. 22) ..... **Pristiphora inthanoni sp. n.**

9 Antennal length 2.3× head width (Fig. 20); tegula black; apical 1/3 hind tibia and apical 4 tarsomeres black, basitarsomere white; forewing with intercostal

crossvein; serrulae of lancet serrate, annuli with stout spines nearly as long as segment width(Fig. 24) ..... ***Pristiphora phahompoki*** **sp. n.**

– Antennal length 3.7× head width (Fig. 17); tegula white; apical half of hind tibia and hind tarsus black; forewing without intercostal crossvein; serrulae of lancet deeper, more rounded at apices, annuli with short, fine hairs, length much less than segment width (Fig. 23) ..... ***Pristiphora annetna*** **sp. n.**

10 Black; penis valve with perpendicular spine across width (Fig. 29) ..... ***Pristiphora chalybeata*** **Benson**

– Parts of pronotum, tegula, and legs white; penis valve with short, vertical valvispina (Figs 31, 33) **11**

11 Antenna long, 3.7× head width; penis valve broad, rounded on dorsal and ventral margins (Fig. 31) ..... ***Pristiphora annetna*** **sp. n.**

– Antenna short, about 2.2 X head width; penis valve slender, dorsal and ventral margins straight (Fig. 33) ..... ***Pristiphora ettera*****, sp. n.**

Trichiocampus pruni **Takeuchi**
http://species-id.net/wiki/Trichiocampus_pruni
Figs 1–3

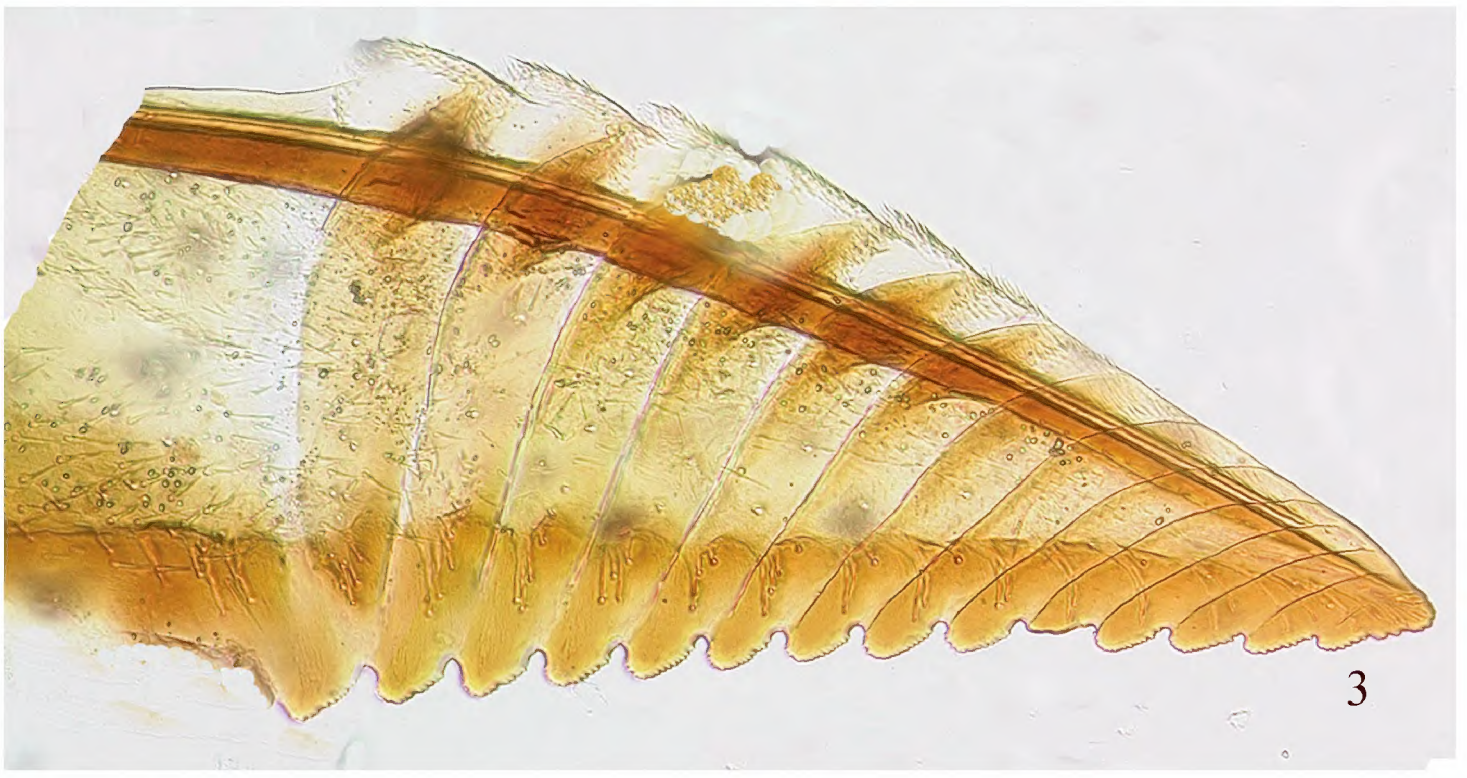
Trichiocampus pruni Takeuchi 1956: 78, Figs 11, A–D.

Cladius takeuchii Liston, Taeger, and Blank, in Blank et al. 2009: 20. New name for *Trichiocampus pruni* Takeuchi, considered a secondary homonym of *Priophorus pruni* Rohwer, 1922, if all placed in *Cladius*.

Description. Female. Length, 6.0 mm. Entirely black; wings uniformly infuscated. Antennal length 3.0× head width; 3rd antennomere 0.7× length of 4th antennomere. Malar space 2.0× diameter of front ocellus. Lower interocular distance 1.4× eye height. Tarsal claw with long inner tooth, almost equal in length and width to outer tooth; with very small, indistinct basal lobe. Fore and hind basitarsomere subequal in length to following 3 tarsomeres combined. Sheath from above broad at base, evenly tapering to acute apex; in lateral view rounded with long, curved hairs (Fig. 2). Lancet (Fig. 3) broadly triangular; annuli without teeth or hairs; basal 6 annuli curved dorsally; serrulae lobelike, asymmetrical, with fine subbasal teeth.

Male. Not seen. Described as similar to the female and male genitalia illustrated by Takeuchi (1956).

Material examined. "THAILAND Mae Hong Son, Namtok Mae Surin NP, Visitor's center, 19°21.593'N, 97°59.254'E, 228 m, Malaise trap, 19–26.viii.2007, Manu Namadkum leg., T5872"; "THAILAND Chiang Mai, Doi Phahompok NP, Doi Phaluang, 20°1.06'N, 99°9.581'E, 1449 m, Malaise trap, 14–21.x.2007, P. Wongchai leg., T6187"; "THAILAND Chiang Mai, Doi Phahompok NP, Doi Phaluang, 20°0.966'N, 99°9.579'E, 1449 m, Malaise trap, 7–14.viii.2007, Komwuan Srisom & Prasit Wongchai leg., T2850" (QSBG, USNM).



Figures 1–3. *Trichiocampus pruni* **1** Dorsolateral view; left line points to basal anal cell; right line to position of M joining Sc+R **2** Sheath and ovipositor **3** Lancet.

Discussion. This species belongs to the tribe Cladiini, characterized by the forewing venation: vein M meeting Sc+R close to the point where Rs meets Sc+R and vein 2A+3A complete, fused with 1A at its center and forming a basal anal cell. For Cladiini, Benson recorded *Priophorus nigricans* (Cameron) and *P. brullei* Dahlbom from Myanmar, and *Cladius pectinicornis* (Geoffroy) from the Himalayas. All three have a narrow, well-sclerotized lancet with lateral teeth on the annuli, not the *Trichiocampus*-like saw as in Fig. 3, which is broadly triangular, lacks annular spines or hairs, and has deep, rounded serrulae.

I refer the Thai specimens to *Trichiocampus pruni* because of their similarity to the description and illustrations of *T. pruni* provided by Takeuchi (1956). The serrulae of the Thai specimens are slightly more asymmetric than those illustrated by Takeuchi, but other than this they appear identical. *Trichiocampus pruni* was described from the Kuriles and Japan (Hokkaido and Honshu) and has since been

recorded in China (Nie and Wei 2009), so it is not improbable that it could occur as far south as Thailand.

Nie and Wei (2009) included *T. pruni* in their key to the *Trichiocampus* species of China. It is the only entirely black species they treat. In the key, two groups of *Trichiocampus* are distinguished in the first couplet, one with the fore- and hind basitarsomeres distinctly shorter than the three following tarsomeres together and the other with the fore- and hind basitarsomeres longer than the three following tarsomeres together. *Trichiocampus pruni* is included with those species with the fore and hind basitarsomeres "distinctly shorter" that the three following tarsomeres together. Takeuchi (1956) described the front basitarsomere about as long as the three following together, and in the Thai specimens, the fore and hind basitarsomeres are subequal to the length of the three following tarsomeres together; thus, the Thai specimens examined could not be keyed past couplet one in Nie and Wei (2009).

I consider *Trichiocampus* as a valid genus, following Smith (1974), Smith (1979), and Nie and Wei (2009). *Trichiocampus pruni* is therefore not a secondary homonym, and the replacement name *Cladius takeuchii* is unnecessary. Therefore I use *T. pruni* as the valid name (ICZN 1999, Article 59.4).

***Dineura sharkeyi* Smith, sp. n.**
urn:lsid:zoobank.org:act:F3422910-6C2D-431D-929A-411D54CFEF8
http://species-id.net/wiki/Dineura_sharkeyi
Figs 4–7

Description. Female. Length, 4.5 mm. Head black with clypeus brown and mouthparts white. Thorax black with posterior angles or pronotum and tegulae white; small orange-brown spot on central posterior margin of mesepisternum. Legs white with femora light orange. Abdomen brown, lighter than thorax, with narrow posterior margin of segments white; sheath black; 9th tergite, cercus, and apical sternite orange brown. Wings hyaline; veins and stigma brown with extreme bases of veins white.

Head and thorax shiny, with fine white pubescence; abdomen shiny with very fine microsculpture on tergites. Antennal length (apical antennomere missing) about 2.1× head width; 3rd antennomere subequal in length to 4th antennomere. Clypeus circularly emarginated, emargination about half medial length of clypeus. Malar space about 1.5× diameter of front ocellus. Postocellar area 3.6× broader than long. Left mandible evenly tapering from base to apex. Distance between eye and lateral ocellus about 1.2× distance between lateral ocelli. Lower interocular distance 1.6× eye height. In dorsal view, head rounded behind eyes, distance behind eyes about 0.8× eye length. Forewing with 2A+3A straight; 2r present; crossvein 2r-m absent; intercostal crossvein basal to M. Hind basitarsomere subequal to length of following 3 tarsomeres combined. Tarsal claws simple. Tibial spurs short, inner spur about 0.4× length of basitarsomere. Sheath simple (Fig. 6), from above broad at base evenly tapering to acute apex; hairs straight.

Figures 4–7. *Dineura sharkeyi*, holotype **4** Lateral view; line points to vein 2r **5** Dorsal view **6** Apex of abdomen and sheath, dorsal view **7** Lancet.

Cerci shorter than sheath in dorsal view. Lancet long, slender, well sclerotized, serrulae most evident on apical third; annuli with short, stout spines (Fig. 7).

Male. Unknown.

Holotype. Female labeled "Thailand, Soi Dao, 500-1850 m., sweep, UTM 1429610, Jan. 16, 2005, Sharkey" (QSBG).

Etymology. The species is named for the collector, M. J. Sharkey, University of Kentucky.

Discussion. This species is assigned to *Dineura*. It shares most characters with species of *Dineura* except for the simple tarsal claws and absence of vein 2r-m in the forewing: broad malar space, emarginated clypeus, forewing with vein 2r present, intercostal crossvein basal to vein M, and similarities of the sheath and lancet. All other species have the tarsal claw with long inner tooth. The lancet is almost identical to species in *Pristiphora* subgenus *Sharliphora*, previously known as the *Pristiphora ambigua* group. The lancets of the three *Pristiphora* (*Sharliphora*) species are illustrated by Wong (1969: Figs 1–6), and that of *P. amphibola* (Förster) is the closest. However, *Dineura sharkeyi* shares most characters with *Dineura* and cannot be a *Pristiphora*.

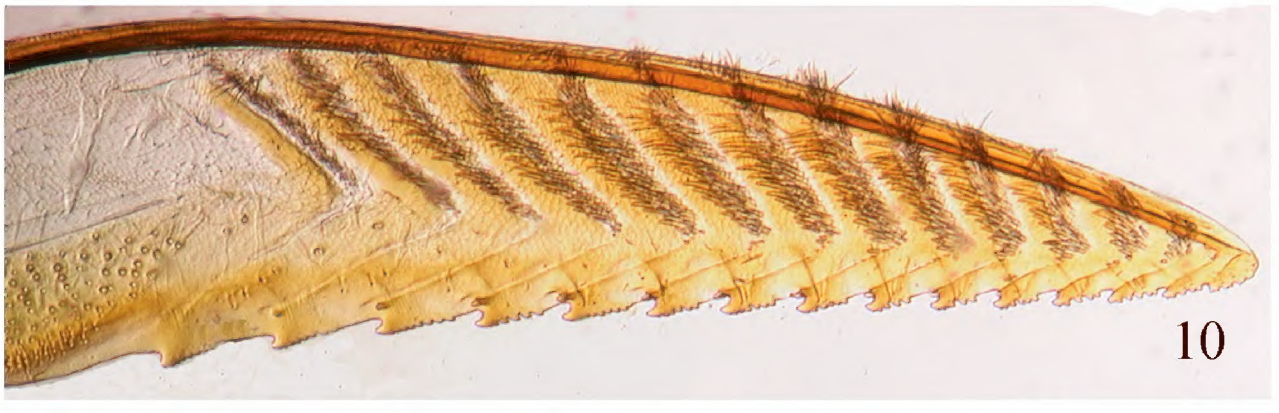
Dineura sharkeyi differs from the two species known from China, *D. blanki* Wei and *D testaceipes* (Klug) by the simple tarsal claws and long lancet with short annular spines. Other species of the genus have a long inner tooth on the tarsal claws and the lancet is shorter and broader and usually with long annular teeth on the central segments (Wei 2002b, Schmidt and Walter 1995).

***Moricella rueaensis* Smith, sp. n.**
urn:lsid:zoobank.org:act:7DFF3E30-74B9-400D-A337-1B2EA0FF09C2
http://species-id.net/wiki/Moricella_rueaensis
Figs 8–10

Description. Female. Length, 8.0 mm. Antenna black. Head black with clypeus light orange, apex of mandible red brown, labrum and maxilla white to light orange with upper surfaces mostly black. Thorax and abdomen orange; sheath black. Legs orange with apical foretarsomere black, midtarsus brown to black, and apical half of hind femur, tibia, and tarsus black. Wings hyaline; veins and stigma black.

Head smooth, shiny, without punctures. Antennal length 2.3× head width; 3rd antennomere 1.2× length of 4th antennomere. Clypeus short, broad, about 4.0× broader than long, slightly broadly emarginated in front. Malar space short, about 0.25× diameter of front ocellus. Left mandible evenly tapering from base to apex. Distance between eye and hind ocellus subequal to distance between hind ocelli; postocellar area about 2.0× broader than long. Lower interocular distance about 1.1× eye height. Forewing with 3 cubital cells; intercostal crossvein absent; crossvein 2r present in one wing, absent in the other. Pulvilli small, on tarsomeres 1–4. Inner hind tibial spur about ¼ length of hind basitarsomere and equal to width of hind tibia at apex. Hind basitarsomere 1.1× length of remaining tarsomeres combined. Tarsal claws with long inner tooth, equal in length to outer tooth. Sheath from above broad, with short lateral scopae (similar to Benson 1968, fig. 412). Lancet (Fig. 10) with 15 serrulae; annuli strongly curved, V-shaped, with thick, stout spines on dorsal curve and lacking hairs or spines on ventral curve; serrulae with 6 or 7 subbasal teeth on basal serrulae, gradually decreasing to 3 or 4 on apical serrulae; serrulae 2–10 with small spurette dorsal to anterior margin of serrula.

Male. Unknown.



Figures 8–10. *Moricella rueaensis*, holotype **8** Lateral view **9** Dorsal view; left line points to position of M joining Sc+R, right line points to vein 2r **10** Lancet.

Holotype. Female, labeled "THAILAND Loei, Phu Ruea NP, Pah Lo Nay, 17°30.502'N, 101°20.868'E, 1343 m, Malaise trap, 26.ix–2.x.2006, Nu Koonchal Jaaroenchal leg., T833" (QSBG).

Etymology. The species name is derived from the type locality, Phu Ruea National Park.

Discussion. *Moricella* is close to *Mesoneura* and *Dineura* and is characterized by the narrower malar space equal to or less than diameter of the front ocellus, clypeus truncate with slight median depression; pentagonal area obsolete; left mandible in lateral view evenly tapering from base to apex, third antennomere slightly longer than the fourth, forewing with intercostal crossvein present and interstitial with vein M and with four cubital cells, the hind basitarsomere equal to the following three tarsomeres combined, and the tarsal claws cleft with the inner tooth slightly long and broader than the outer tooth. The new species shares most characters with *Moricella* except the forewing lacks the intercostal crossvein and has only three cubital cells. Because of the similarities, including the presence of spurettes near the serrulae and stout, thick spines on the annuli of the lancet, I place this species in *Moricella*. *Moricella* includes two other species, *M. rufonota* Rohwer (1916) from Taiwan and *M. nigrita* Wei, 1998, from Yunnan, China. Wei (1998) illustrated both species. Wu et al. (1982) recorded the host of *M. rufonota* as *Cinnamomum camphora* Nees. and Eberm. (Lauraceae).

The orange thorax and abdomen and mostly orange legs are diagnostic for *M. rueaensis*. *Moricella rufonota* is black with the pronotum, mesonotum, and upper half or more of the mesepisternum red and the legs have the coxae white apically, femora black, and tibiae white except for the black apical quarter of the hind tibia.

***Nematus soidaoi* Smith, sp. n.**
urn:lsid:zoobank.org:act:058DF73A-3702-41E2-AB39-CA729691B715
http://species-id.net/wiki/Nematus_soidaoi
Figs 11–13

Description. Female. Length, 7.5 mm. Antenna and head black; spot at center of clypeus, labrum, and mouthparts white. Thorax black with posterior half of pronotum and tegula white. Abdomen and sheath black. Foreleg mostly white, coxa at apex, trochanter, femur except basal and apical parts black; midleg mostly white, coxa at apex and apex of tibia and apical 4 tarsomeres brown to black; hind leg with coxa at apex white, femur black with extreme basal and apical parts white; tibia with two-thirds white, apical third black; basitarsomere with basal half white and apical half black, rest of tarsomeres black. Wings hyaline, veins and stigma black.

Head and body smooth, shiny, without punctures; with fine white pubescence. Antennal length 2.3× head width; 3rd antennomere subequal in length to 4th antennomere. Clypeus roundly emarginated anteriorly. Malar space equal to diameter of front ocellus. Left mandible bulbous at base, apical portion slender. Lower interocular distance 1.3× eye height. Distance between eye and hind ocellus 0.7× distance between

Figures 11–13. *Nematus soidaoi*, holotype **11** Lateral view **12** Head, front view **13** Sheath and lancet.

hind ocelli; postocellar area about 2.6× broader than long. Forewing with intercostal crossvein present, basal to M; 3 cubital cells. Hind basitarsomere about 0.8× length of remaining tarsomeres combined; pulvilli large, almost equal to breadth of tarsomeres, on tarsomeres 1–4. Hind tibia with longitudinal groove on outer surface. Tarsal claws with long inner tooth, slightly shorter than outer tooth. Inner hind tibial spur about half length of hind basitarsomere and slightly longer than apical width of hind tibia at apex. Sheath in dorsal view broad at base with slight, rounded scopae much shorter than central portion, central portion acuminate at apex, with long setae arising from scopae; in lateral view straight above, rounded below (Fig. 13). In dorsal view, cerci equal to sheath length. Lancet (Fig. 13) with serrula long, lobelike, length more than 2× width.

Male. Unknown.

Holotype. Female, labeled "Thailand, Soi Dao, 500-1850 m, sweep, UTM 1429610, Jan. 16, 2005, Sharkey" (QSBG).

Etymology. The species name is derived from the type locality.

Discussion. This species is assigned to *Nematus* by similarity of the long inner tooth of the tarsal claws, emarginated clypeus, and similar wing venation. I have not seen any species of *Nematus* with such long, lobelike serrulae (Fig. 13). The basal rounded portion of the sheath with long setae representing small lateral scopae (as can be seen in the lateral view in Fig. 13) is also unusual for species of *Nematus*, most of which have an evenly slender sheath in dorsal view. Because the lancet is partly exerted and the long serrulae are diagnostic, I have not dissected the specimen for a close-up of the lancet.

Pristiphora Latreille

http://species-id.net/wiki/Pristiphora

Discussion. This is a large Holarctic genus with well over 100 species (Taeger et al. 2010). All species treated here, except *P. chalybeata*, differ from the others described from southeastern Asia, and I have found nothing in the Palearctic fauna that agree with these species. I have checked descriptions and available specimens of species treated by Benson (1958), Wong (1960, 1977), Saini (2006), Haris (2006, 2007), and in the literature covering species from China. Taeger et al. (2010) separated several subgenera of *Pristiphora* but the species from southeastern Asia were not assigned to subgenus. So far as I can tell, all species examined and for which the original descriptions were checked would belong to the subgenus *Pristiphora*.

Wong (1960, 1977) proposed several species complexes. The species he treated in 1977 were placed in the *chlorea* complex and the *pallidiventris* complex, with one species, *P. sinensis* Wong, not assigned to a complex but placed near *P. geniculata* (Hartig).

The *pallidiventris* complex of Wong (1977) includes the largest number of species, characterized by the lack of hairs or spines on the annuli of the lancet (as in Fig. 25), the annuli on the lancet becoming progressively more slanted towards the apex, a short scopa on the sawsheath, pale venter of the abdomen, antenna pale beneath, and penis valve of male with a valvispina located vertically near the center of the apically tapered paravalva. None of the species described here fall into this complex. The following species from southeastern Asia were checked, and all lack hairs or spines on the annuli and appear to belong to the *pallidiventris* complex: *P. alta* Saini and Chambal, 1996 (India: West Bengal); *P. basidentata* Wei, 1998 (in Wei and Nie 1998) (China: Zhejiang); *P. caiwanzhii* Wei, 1998 (in Nie and Wei 1998) (China: Henan); *P. chonganica* Wei, 2003 (in Wei and Nie 2003) (China: Fujian); *P. ecarinata* Saini and Chambal, 1996 (India: Himachal Pradesh, Uttarauchal); *P. formosanus* Rohwer, 1916 (Taiwan) (Fig. 25); *P. lii* Wei, 1998 (in Nie and Wei 1998) (China: Henan); *P. longitangia* Wei, 1998 (in Wei and Nie 1998) (China: Zhejiang); *P. melanopygiolia* Wei, 1999 (in Wei et al. 1999) (China: Henan); *P. nigrotarsalina* Wei, 2003 (in Wei et al. 2003a) (China: Guangxi); P. *obliqualis* Wei, 2003 (in Wei and Nie 2003) (China: Fujian); *P. sauteri* Rohwer, 1916 (Taiwan); *P. tuberculatina* Wei, 2003 (in Wei and Nie 2003) (China: Fujian); *P. zhongi* Wei, 2002 (China: Henan).

The *chlorea* complex of Wong (1977) includes those species with the tarsal claw with a prominent inner tooth, the lancet with stout annular spines or hairs, concave basal annuli, and median annuli not reaching the dorsal margin, the lance with a carina on the radix, and males with a hooklike valvispina. Wong (1977) included *P. borneensis* Forsius, 1933 (Malaysia: Sabah) and *P. nankingensis* Wong, 1977 (China: Nanking) in this complex, and, according to descriptions, *P. chalybeata* Benson, 1963 (Myanmar), *P. lineogenata* Wei, 2002 (in Wei and Nie 2002) (China: Guizhou), *P. rufocincta* Benson, 1963 (Myanmar), *P. nigrescenta* Saini and Chambal, 1996 (India: Uttaranchal), and *P. zhejiangensis* Wei, 1995 (China: Zhejiang) may fall into this complex. The species described here may also belong to this complex, but none have the lancet structure similar to the above and the males, where known, do not have a hooklike valvispina. Thus, these new species appear to be closest to those included in the *geniculata* group of Wong (1960, 1977). Also, the male of *P. borneensis*, described below, was unknown to Wong (1977), and it does not have the hooklike valvispina typical for this complex (Fig. 27).

Pristiphora oligalucina Wei, 2002a (China: Henan), is said to have no annular hairs (Wei 2002a), which would place it in the *pallidiventris* complex, but the species is stated to be near *P. geniculata*, which might place it near *P. sinensis* (China: Fujian, Nanking). I am unable to place *P. beijingensis* Zhou and Zhang, 1993 (in Zhou et al. 1995), but this occurs farther north in the Beijing area, is associated with *Populus* sp., and is unlikely to occur in Thailand. *Pristiphora lamdongensis* Haris, 2007, cannot be placed because the lancet was not illustrated. It differs from all species described here by the very minute inner tooth of the tarsal claws. The species described here have a long inner tooth half or more the length of the outer tooth. Haris (2007) also noted that the elongated maxillary palpus and brown rounded spot in the first cubital cell in the forewing are unique.

Both *P. chalybeata* Benson and *P. rufocincta* Benson have the abdomen red or yellow; the former has the third abdominal segment red in the female but the male recorded below has identical male genitalia as Benson (1963) illustrated though it is mostly black. All species described here have the abdomen black or mostly black above and white below.

***Pristiphora ettera* Smith, sp. n.**
urn:lsid:zoobank.org:act:18A4769D-60A4-4890-B62C-9608705C28C3
http://species-id.net/wiki/Pristiphora_ettera
Figs14, 21, 32, 33

Description. Female. Length, 7.0 mm. Antenna black; scape and pedicel white. Head black with labrum and palpi white. Thorax black; tegula, pronotum, and postspiracular sclerite (except anterior margin) white; mesoscutellum white at center, black at sides, scutellar appendage and metanotum pale orange. Abdomen with basal plates black; tergites 4–5 with broad anterior halves half or more black; posterior portion

Figures. 14–16. *Pristiphora*, holotypes **14** *P. ettera*, lateral view **15** *P. inthanoni*, lateral view **16** *P. inthanoni*, dorsal view.

black, 6-9 with very narrow posterior portion white; sheath black. Legs white, only apical tarsomeres black. Wings hyaline, veins and stigma black.

Head and body shiny, with fine, minute punctures; covered with fine, white pubescence. Antennal length 2.3× head width; 3rd and 4th antennomeres subequal in length. Malar space linear. Distance between eye and hind ocellus subqual to slightly shorter than distance between hind ocelli. Postocellar area 2.4× broader than long. Lower interocular distance slightly less than eye height. Forewing with 4 cubital cells; intercostal crossvein present and interstitial with M. Pulvilli small; only evident on tarsomeres 3 and 4. Hind basitarsomere subequal to slightly shorter than length of remaining tarsomeres combined; inner hind tibial spur about 0.4× length of basitarsomere and subequal to width of hind tibia at apex. Tarsal claws with long inner tooth, about equal in length and width of outer tooth. Sheath broadened at apex, with distinct rounded scopae (similar to Benson 1958, fig. 414). Lancet (Fig. 21) with 14 serrulae; each with 6–8 very fine subbasal teeth, large spurette dorsal to anterior edge of serrulae 3 to apex, spurette about as large as serrula; basal annuli curved, each with broad band of long stout spines.

Male. Length, 6.5 mm. Similar to female except head with clypeus and spot on lower inner orbit white; pronotum black with posterior edge narrowly white; and mesoscutellum black. Malar space about half diameter of front ocellus. Lower interocular distance about 1.1× eye height. Forewing with intercostal crossvein present and basal to vein M; with 3 cubital cells. Genitalia in Figs 32, 33; penis valve slender, with a short small valvispina directed vertically near center of valve.

Type material. Holotype female, labeled "THAILAND Chiang Mai, Huai Nam Dang NP, Helipad, 19°18.33'N, 98°36.289'E, Malaise trap, 14–21.xi.2007, Anuchart & Thawatchai leg., T5550" (QSBG). Paratypes: "THAILAND, Han Doi Kha NP, Office 12, 19°12.138'N, 101°4.711'E, 1331 m, Malaise trap, 8–15.xi.2007, Chavoen & Nikom leg., T3261" (1 ♀); "THAILAND Chiang Mai, Doi Phahompok NP, Doi Phaluang, 20°1.06'N, 99°9.581'E, 1449 m, Malaise trap, T2928, 20–27.vii.2007, Wongchai P. leg." (1 ♂); "THAILAND, Chiang Mai, Doi Phahompok NP, Kiewlom1/montane forest, 20°3.549'N, 99°8.552'E, 2174 m, Malaise trap, 21–28.v.2008, P. Wongchai leg. T6100" (1 ♂); "THAILAND Chiang Mai, Doi Phahompok NP, Kiewlom1/montane forest, 20°3.549'N, 99 °8.552'E, 2174 m, Malaise trap, 21–28.x.2007, P. Wongchai leg. T6181" (2 ♂); "THAILAND Chiang Mai, Doi Phahompok NP, Doi Phaluang, 20°1.06'N, 99°9.581'E, 1449 m, Malaise trap, –14.xi.2007, P. Wongchai leg, T6209" (2 ♂); "THAILAND Chiang Mai, Doi Phahompok NP, Doi Phaluang, 20°1.06'N, 99°9.581'E, 1449 m, Malaise trap, 21–28.xi.2007, P. Wongchai leg., T6211" (2 ♂); "THAILAND Chiang Mai, Doi Phahompok NP, Doi Phaluang, 20°1.06'N, 99°9.581'E, 1449 m, Malaise trap, 21–28.x.2007, P. Wongchai leg., T6188" (1 ♂). (QSBG, USNM).

Etymology. The species name is an arbitrary combination of letters and is to be treated as a noun.

Discussion. I have not seen other species of *Pristiphora* with large spurettes above the serrulae plus the strong, stout spines on the annuli (Fig. 21). The only other *Pris-*

tiphora species illustrated that apparently has such spurettes on the lancet is *P. lineogenata* Wei (in Wei and Nie 2002: fig. 67) from Guizhou Province, China, but Wei illustrated only two serrulae and he compares his species with *P. borneensis*, with which *P. ettera* has no similarities (see Wong 1977: fig.15). *Pristiphora etteri* also has the scape, pedicel, mesoscutellum, posterior margins of the tergites, and the sternites white, whereas these are black in *P. lineogenata*. The male penis valve (Fig. 33) is similar to that of *P. sauteri*, illustrated by Wong (1977: fig. 8).

***Pristiphora inthanoni* Smith, sp. n.**
urn:lsid:zoobank.org:act:C1D614DE-036A-4656-9B59-BD9F747D29F8
http://species-id.net/wiki/Pristiphora_inthanoni
Figs 15, 16, 22

Description. Female. Length, 5.0 mm. Antenna black, scape and pedicel and undersurface of flagellomeres 1 and 2 brown. Head black with supraclypeal area, clypeus, and labrum brown; mouthparts white. Thorax black with postspiracular sclerite, and tegula white; posterior margin of metapleuron white. Legs white, apical ring on hind tibia black. Abdomen black above; tergites 2 to apex with narrow white posterior band; venter white except apical 3 sternites and sheath black. Wings hyaline, veins and stigma black.

Head and body shiny, finely punctuate, covered with fine white pubescence. Antennal length 2.8× head width; 3rd antennomere equal in length to 4th antennomere. Malar space equal to about half diameter of front ocellus. Distance between eye and hind ocellus about 0.9× distance between hind ocelli. Postocellar area about 3.0× broader than long. Lower interocular distance slightly longer than eye height. Forewing with intercostal crossvein present, interstitial with M; 4 cubital cells (vein separating first two faint). Pulvilli small, on tarsomeres 1–4. Hind basitarsomere subequal to length of remaining tarsomeres combined; inner hind tibial spur about 0.5× length of basitarsomere and slightly longer than width of hind tibia at apex. Tarsal claws with long inner tooth, slightly shorter than outer tooth. Sheath broadened at apex, with rounded distinct lateral scopae (similar to Benson 1958, fig. 414). Lancet (Fig. 22) with 14 serrulae, serrulae diminishing in size toward apex and apical portion without serrulae; basal 7 serrulae rounded, becoming flatter toward apex, subbasal teeth absent; annuli curved, each with band of stout spines; spines on upper half of annuli 1 and 2, complete on annuli 3 and 4, on lower half or less of annuli 5–11, and absent at apex.

Male. Unknown.

Holotype. Female labeled "THAILAND Chiang Mai, Doi Inthanon NP, Checkpoint 2, 18 °31.554'N, 98 °29.940'E, 1700 m, Malaise trap, 24.xi–1.xii.2006, Y. Areeluck leg., T1870" (QSBG).

Etymology. The species name is derived from the type locality, Doi Inthanon National Park.

Discussion. The lancet with rounded serrulae at the base becoming flatter toward the apex and absent at the extreme apex, the white legs and venter of the abdomen, and mostly black pronotum are characteristic for this species. It is similar to *P. ettera* in color except for the mostly black pronotum and brown clypeus and supraclypeal area. The color is also similar to *P. formosana,* but the lancet of *P. formosana* lacks annular spines or hairs (Wong 1977: fig. 20).

***Pristiphora annetna* Smith, sp. n.**
urn:lsid:zoobank.org:act:2C754930-3974-4B0B-AE8E-CBAAECF6C03D
http://species-id.net/wiki/Pristiphora_annetna
Figs 17, 18, 23, 30, 31

Description. Female. Length, 6.0 mm. Black with anterior edge of labrum and mouthparts dull white; scape and pedicel white at apices; tegula and postspiracular sclerite white; apical third of mesoscutellum white. Legs with trochanters white; foreleg white with coxa and inner surface of femur black; midleg with coxa black, trochanter white, femur black, tibia white on basal three-fourths, brown on apical fourth, tarsus with basitarsomeres white to brown with remaining tarsomeres black; hind leg with coxa black, trochanter and base of femur white, basal two-fifths of tibia white, apical three-fifths of tibia and entire tarsus black. Abdomen black. Wings hyaline; veins and stigma black.

Head smooth, shiny, without punctures; head and body densely covered with fine white pubescence. Antennal length 3.7× head width; 3rd antennomere equal to length of 4th antennomere. Malar space about half diameter of front ocellus. Distance between eye and hind ocellus about 0.8× distance between hind ocelli. Postocellar area 3.0× broader than long. Lower interocular distance slightly longer than eye height. Forewing with intercostal crossvein absent; with 3 cubital cells. Pulvilli minute, on tarsomeres 1–4. Tarsal claws with small inner tooth, about half length of outer tooth. Hind basitarsomere subequal to or very slightly shorter than length of remaining tarsomeres combined; hind tibial spur about 0.4× length of hind basitarsomere and equal to width of inner hind tibia at apex. Sheath broadened at apex, with distinct lateral scopae (similar to Benson 1958, fig. 414). Lancet (Fig. 23) with about 19 serrulae, serrulae on basal half rounded, those on apical half becoming flat, with very fine subbasal teeth; annuli straight but basal 3 or 4 slanted forward, each with very narrow band of fine hairs less than half width of segments.

Male. Length, 5.0 mm. Similar to female except malar space narrower, almost linear, about ¼ width of front ocellus and postocellar area about 2.2× broader than long. Genitalia in Figs 30, 31; penis valve oval, dorsal and ventral margins rounded, with a short, small valvispina directed vertically near center of valve.

Type material. Holotype female labeled "THAILAND Nan Doi Phu Kha NP, Office 14, 19°12.488'N, 101 °4.907'E, 1375 m, Malaise trap, 22–29.xii.2007, Charoen & Nikim leg., T3280" (QSBG). Paratype: Same data as for holotype (1 ♂, USNM).

Figures 17–18. *Pristiphora annetna*, holotype **17** Lateral view **18** Apex of abdomen, sheath, and lancet.

Etymology. The species name is an arbitrary combination of letters and is to be treated as a noun.

Discussion. This species seems closest to *P. lamdongensis* from southern Vietnam, sharing the 3 cu cells and lack of the intercostal crossvein in the forewing and the small inner tooth of the tarsal claws. However, the inner tooth of the tarsal claws is minute in *P. lamdongensis* (Haris 2007: fig. 10), whereas it is about half the length of the outer tooth in *P. annetna*. The unusually long antennae, which are 3.7× the head width (Fig. 17), are also distinctive for this species. Haris (2007) compares the length of the

antenna as equal to the body length, though they are shorter than the body length in his illustration (Haris 2007: fig. 11). The antennae are about as long as the body length in *P. annetna*. *Pristiphora annetna* might also be confused with *P. sauteri*, but the lancet of *P. sauteri* lacks annular spines or hairs (Benson 1963: fig. 12) and the pronotum is largely white and only the apex of the hind femora and apical quarter of the hind tibiae are black to dark brown.

***Pristiphora phahompoki* Smith, sp. n.**
urn:lsid:zoobank.org:act:1E7C000E-C40A-4FFF-92DA-12223DCDF1A6
http://species-id.net/wiki/Pristiphora_phahompoki
Figs 19, 20, 24

Description. Female. Length 5.5 mm. Black; mouthparts brown. Foreleg white with inner surface of femur black. Mid- and hind legs white; femora and apical third or less of hind tibiae black and apical four tarsomeres of hind leg brown to black. Wings hyaline, veins and stigma black.

Head smooth and shiny, covered with fine, white pubescence, without noticeable punctures. Antennal length 2.3× head width; 3rd antennomere equal in length to 4th antennomere. Malar space about half diameter of front ocellus. Lower interocular distance 1.2× eye height. Distance between eye and hind ocellus 0.8× distance between hind ocelli. Postocellar area about 2.7× broader than long. Forewing with intercostal crossvein present, basal to vein M; with 3 cubital cells. Pulvilli small, on tarsomeres 1–4. Hind basitarsomere slightly shorter than length of remaining tarsomeres combined. Hind tibial spurs about 0.4× length of hind basitarsomere. Tarsal claws with long inner tooth, slightly more than half length of outer tooth. Sheath broadened at apex, with lateral scopae (similar to Benson 1958, fig. 414). Lancet (Fig. 24) with about 20 serrulae, serrulae flat with very fine subbasal teeth; basal 3 annuli slightly curved, rest straight, each annulus with stout spines more than half width of segments, spines only on upper portion of annuli 1 and 2.

Male. Unknown.

Holotype. Female labeled "THAILAND Chiang Mai, Doi Phahompok NP, Kewlom1/montane forest, 20°3.549'N, 99°8.552'E, 2174 m, Malaise trap, 28.ii-7.iii.2008, Seesom. K. leg, T2960" (QSBG).

Etymology. The species name is derived from the type locality, Doi Phahompok National Park.

Discussion. This species is mostly black, similar to *P. annetna*, but the antennae are short, only about 2.2× the head width, the tegulae are black, the basitarsomeres are white, the forewing has the intercostal crossvein, and the lancet (Fig. 24) has flatter serrulae and longer annular spines. I have not found other species of *Pristiphora* with the color combination and lancet characters of this species.

Figures 19–20. *Pristiphora phahompoki*, holotype **19** Lateral view **20** Dorsal view.

***Pristiphora chalybeata* Benson**
http://species-id.net/wiki/Pristiphora_chalybeata
Figs 28, 29

Pristiphora chalybeata Benson 1963: 23, Figs 6, 11

Description. Female. Described by Benson (1963).

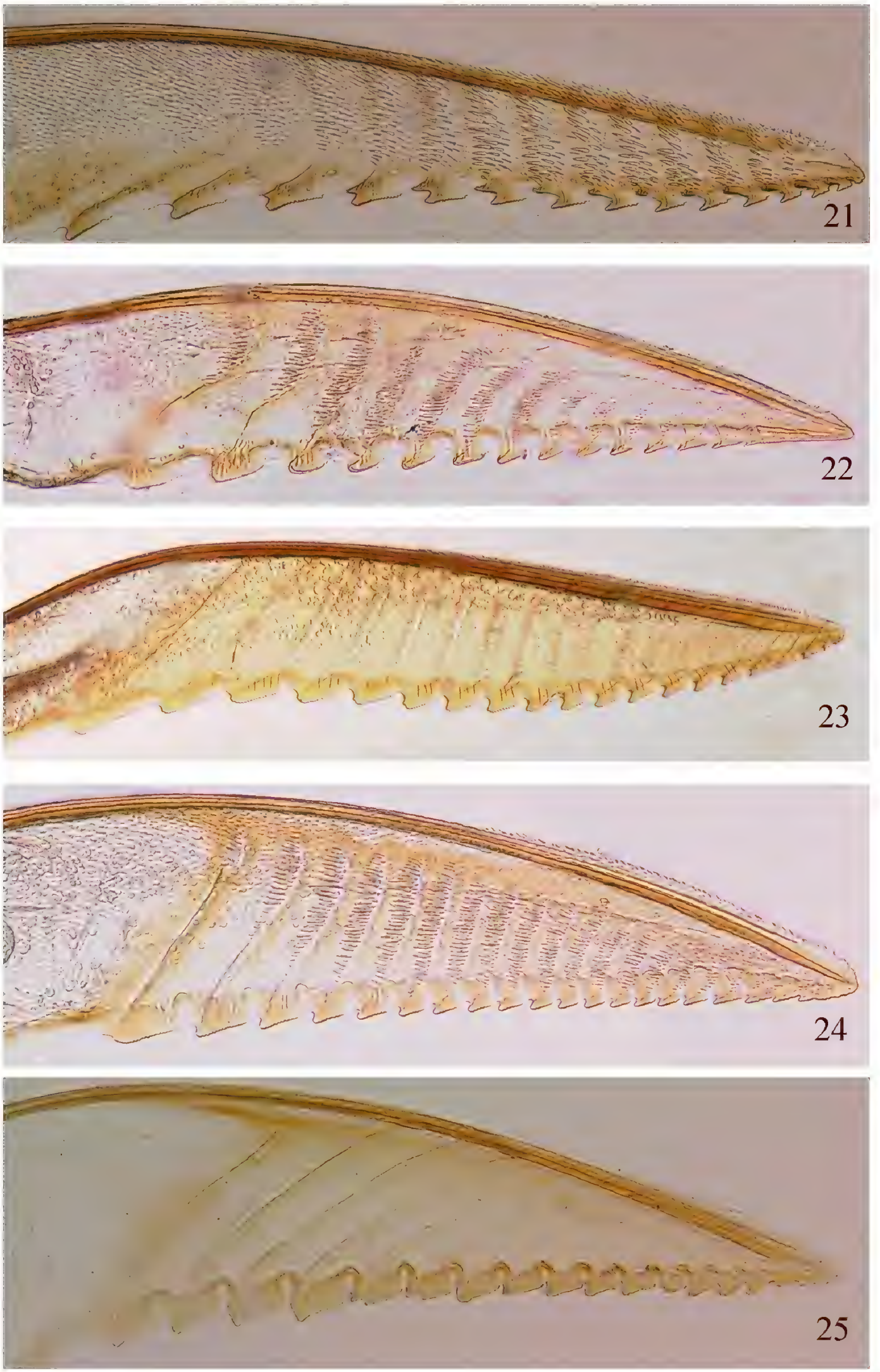
Male. Length, 5.0 mm. Black with narrow posterior margins of abdominal segments white; legs with coxae black, trochanters white, femora black except extreme apex and base of fore- and midfemora white, tibiae white except apical half of hind tibia black, fore- and midtarsi white with apical 3 tarsomeres black, hind tarsus black with small white spot at base of hind basitarsomere. Wings lightly, uniformly infuscated; veins and stigma black.

Head and body shiny, covered with short white pubescence; head and thorax with widely spaced minute punctures. Antennal length about 2.2× head width, flagellum without thick interspersed spines. Mandible in lateral view swollen at base, with slender bladelike apex. Malar space nearly linear, about one-fourth width of front ocellus. Lower interocular distance about 1.3× eye height. Distance between eye and hind ocellus about 0.9× distance between hind ocelli. Postocellar area about 2.2× broader than long. Tarsal claws with long inner tooth, slightly shorter than outer tooth. Hind basitarsomere 0.8× length of following tarsomeres combined; inner hind tibial spur about 0.2× length of basitarsomere. Genitalia in Figs 28, 29; penis valve slender with strong transverse spine; gonodcardo narrow.

Specimen examined. THAILAND, Chiang Mai, Doi Inthanon NP, Kew Maepan Trail, 8°33.162'N, 98°28.810'E, 2200 m, Malaise trap, 29.xii.2006–5.i.2007, Y. Areeluck leg., T1893 (1 ♂).

Discussion. Wei (1998: fig. 5) illustrated the apex of the penis valve of *Moricella rufonota*. The specimen examined has a transverse spine very much like *P. chalybeata*; however, the penis valve (Fig. 29) is identical to that illustrated by Benson (1963: fig. 6) for *P. chalybeata*, though in the slide mount of the valve, it appears at a slightly different angle. I have not seen this type of spine in specimens or descriptions of other *Pristiphora* species.

It is possible Benson (1963) made the wrong association of the male with the female holotype of *P. chalybeata*. The female Benson described is a typical *Pristiphora*, with characteristic mandibles, wing venation, and lancet (Benson 1963, Figs 3, 11). The females of *Moricella* have an evenly tapering left mandible, crossvein 2r is present in the forewing, and the lancets have numerous annular spines and a strong spurette above the anterior portion of each serrula (as in Fig.10). The male, described here, appears to belong to *Pristiphora* because of the more slender, less evenly tapering left mandible and absence of 2r in the forewing; however, it shares with *Moricella* the transverse spine of the penis valve, very narrow gonocardo, and absence of strong interspersed setae on the flagellum. It is possible this is actually the male of *Moricella rueaensis*, but inasmuch as this was associated with *P. chalybeata* by Benson (1963), I retain this placement until sexes can be associated with certainty.



Figures 21–25. *Pristiphora* lancets **21** *P. ettera* **22** *P. inthanoni* **23** *P. annetna* **24** *P. phahompoki* **25** *P. borneensis*.

***Pristiphora borneensis* Forsius**
http://species-id.net/wiki/Pristiphora_borneensis
Figs 26, 27

Pristiphora borneensis Forsius 1933: 177.

Specimens examined. MALAYSIA: SABAH: British North Borneo, Tenompok, 10–14.II.1959, T. C. Maa, collector (3 ♀, BPBM); British North Borneo, Tenompok, 1460 m, Jesselton, 48 km E., 26–31.I.1959, T. C. Maa, collector (1 ♀, BPBM); North Borneo, Ranau, 22–25.II.1959, T. C. Maa, collector (1 ♂, BPBM).

Discussion. The male has not been described. It is black with the apex of the fore- and midfemora, fore- and midtibiae and tarsi, and the basal half of the hind tibia white. The lancet was illustrated by Wong (1977: fig. 15). Benson (1963) and Wong (1977) distinguished it from all other Oriental *Pristiphora* by its linear malar space, but *Pristiphora ettera* has a similar malar space and *Pristiphora annetna* and *P. inthanoni* approach it. Wong (1977) placed it in his *Pristiphora chlorea* complex, near *P. fausta* (Hartig). The male genitalia are illustrated here (Figs 26, 27) and do not have the curved valvispina typical of the *chlorea* complex. The genitalia are unusual among *Pristiphora* because of the unusually long, straight valvispina and the extremely broad gonocardo. *Pristiphora fausta* also has a long valvispina (Wong 1977: fig.7), but it is curved at its apex. I have not seen such a broad gonocardo in other *Pristiphora* species, but this is not usually illustrated by authors who illustrate the male genitalia. The additional records are close to the type locality. The species was described from one female from "North Borneo: Mt. Kinabala, Maru Parei, 5,000 ft., 27 April 1929, H. M. Pendlebury" (Forsius 1933).

***Pristiphora sinensis* Wong**
http://species-id.net/wiki/Pristiphora_sinensis

Pristiphora sinensis Wong, 1977: 101, Figs 1, 2, 4.

Specimen examined. "China, Hupeh, Lichuan Dist., Sui-sa-pa, 27.VII.1948, L. & M. Gressit, collectors" (1 ♀, BPBM).

Discussion. This species was described from both males and females from Nanking, China. I have seen an additional specimen from China. Wei (in Wei and Nie 2003: 50, fig. 28-55) also illustrated the female and male genitalia.

Figures 26–33. Male genitalia. Genital capsule ventral view; penis valve lateral view **26** Genital capsule, *Pristiphora borneensis* **27** Penis valve, *P. borneensis* **28** Genital capsule, *P. chalybeata* **29** Penis valve, *P. chalybeata* **30** Genital capsule, *P. annetna* **31** Penis valve, *P. annetna* **32** Genital capsule, *P. ettera* **33** Penis valve, *P. ettera*.

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